



Autism spectrum disorder and the student teacher relationship: A comparison study with peers with intellectual disability and typical development

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ABSTRACT

This study examined relations among behavior problems, social skills, and student–teacher relationships within a sample of children (mean age 8) with autism spectrum disorders or ASD ($n = 36$) and comparison samples of children with typical development ($n = 91$) or with intellectual disability ($n = 38$). Student–teacher relationships (STRs) for children with ASD appeared to be qualitatively different from those of similarly aged children with ID or typical development. The STRs for children with ASD were considerably poorer, with less closeness and more conflict, than in the two comparison groups. Within the group with ASD, teacher-reported child externalizing behavior and social skills accounted for significant variance in the total score on the Student Teacher Relationship Scale. Conflict was predicted only by externalizing behavior, whereas closeness was predicted by social skills; level of autistic mannerisms negatively related to the teacher's perception of closeness. Findings address the implications for transition to early schooling for children with ASD.

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1. Introduction

Children's relationships with their teachers during the early school years can be pivotal in their subsequent academic, behavioral, and social adjustment in school (e.g. Alexander and Entwistle, 1988; Hamre, Pianta, Downer, & Mashburn, 2008; Pianta & Stuhlman, 2004), with teacher–child conflict having specific implications for the subsequent trajectory of child externalizing behaviors (Doumen et al., 2008). While there is now considerable research indicating the value of early student–teacher relationships (STRs), this has focused almost exclusively on typically developing children. There has been very little study of the student–teacher relationship and its correlates for children with autism spectrum disorder (ASD).

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Understanding this construct for students with ASD is especially important due to the challenges associated with adapting to social and academic behavior patterns in order to fit the demands of the school environment (Alexander and Entwistle, 1988; Calkins, 1994). Research has shown that children's ability to adapt and function in the school environment has important implications for children's long-term academic success (Basil & Reyes, 2003; McConnell, 2002), behavioral adjustment, and, for students with autism, social engagement (Chamberlain, Kasari, & Rotheram-Fuller, 2007). For children with ASD, cognitive, social, adaptive, self-regulatory, and communicative deficits are likely to make this adaptation process especially challenging.

The STR is an important construct conceptualized from multiple perspectives such as shared attachment, motivational impact, and socio-cultural influences (Davis, 2003). This study investigated the STR as defined through the domains of closeness, conflict, and dependency as these components of the STR have emerged as important predictors of children's concurrent and long-term adjustment (Cederlund, Hagberg, Billstedt, Gillberg, & Gillberg, 2008; Murray & Pianta, 2007). Teacher perceptions of both conflict and closeness, in particular, have been shown to have moderate stability from kindergarten through sixth grade (Jerome, Hamre, & Pianta, 2009).

1.1. *The student–teacher-relationship and typically developing children*

When specifically investigating the STR in reference to typically developing children, research has shown that positive STRs seem to play a strong role for children at risk for adverse outcomes. Evidence indicates that conflictual and dependent STRs in the early school years are strong predictors of behavioral challenges over time. Hamre and Pianta (2001), following 179 children from kindergarten to eighth grade, found that, even after controlling for baseline behavior problems, students in kindergarten with high levels of conflictual or dependent STRs were more likely to receive disciplinary infractions and suspensions in upper elementary grades. Additional longitudinal studies reported that students who received high ratings of problem behaviors were predicted to have poorer STRs throughout elementary school and junior high (Howes, Phillipsen, & Peisner-Feinberg, 2000; Jerome et al., 2009).

Interestingly, student–teacher closeness may have a protective effect for students entering school with behavior problems. In their study of kindergarten and first grade outcomes, Silver, Measelle, Armstrong, and Essex (2005) found that student–teacher closeness was most strongly linked to decreases in externalizing behavior problems for the group of children who began kindergarten with high levels of externalizing behaviors. Finally, in a study more relevant to children with developmental delays, Pianta, Steinberg, and Rollins (1995) examined STR quality among kindergarten children who were at high risk for grade retention or special education placement. Those who had more positive, closer, and less conflictual relationships with teachers were ultimately less likely to be retained or placed in special education by the end of the school year, even after controlling for classroom noncompliance and behavior with peers (Pianta et al., 1995).

1.2. *The student–teacher-relationship for children with ID and ASD*

Prevalence rates categorize autism as an increasingly common disorder in children aged 2–17 years (Croen, Grether, Hoogstrate, & Selvin, 2002; Gillberg, Cederlund, Lamberg, & Zeijlon, 2006); indeed, the Center for Disease control suggests a rate of 1 in 88 (CDC, 2012). Naturally, the rise of autism has been accompanied by a surge in service needs. Nationally, the U.S. Department of Education reported a 1260% increase in children with autism aged 6–21 receiving Special Education services from 1992–93 to 2004–5 (U.S. Department of Education, 2009). Parent-reported ASD based on the National Survey on Children's Health, indicated prevalence changes in school children from 1.16% in 2007 to 2.00% in 2011–2012 (Blumberg et al., 2013). The question is no longer whether public school teachers will encounter a child with autism, but what they will do when this inevitably occurs.

Once in the classroom, children with ASD are likely to be less successful in building positive relationships with their teachers than children with typical development. Yet these relationships may be particularly important as compensatory resources for children with ASD, and may protect them against school adjustment problems over time (Meehan, Hughes, & Cavell, 2003). Indeed, there is evidence that positive STRs play a particularly strong role for children with other risks, including behavioral or academic problems, by deflecting the course of their adjustment in school (e.g. Hamre & Pianta, 2001; Peisner-Feinberg et al., 2001; Pianta et al., 1995; Silver et al., 2005). There is little known about the STRs of children with ASD, and there is virtually nothing known about STRs in children who attend non-public school settings exclusively for children with autism. We examined such a group of children against the backdrop of STRs in a similarly aged group of children with intellectual disability and a group of children who were typically developing.

Teachers' relationships with children with ASD or ID have received very little study, and we hypothesized that such relationships would be especially pivotal for these children who are at such developmental risk. There is some evidence that children with developmental disabilities experience poorer STRs than typically developing children. Ladd, Birch, and Buhs (1999) reported that children's level of cognitive maturity at school entry was positively related to STR quality and peer acceptance in kindergarten, based on behavioral observations of STR quality. Consistent with this, we have found significantly poorer STR quality for kindergarten children with developmental delays than typically-developing children (Eisenhower, Baker, & Blacher, 2007; McIntyre, Blacher, & Baker, 2006). Moreover, the poorer STR quality continued across the early school years and with different teachers (Blacher, Baker, & Eisenhower, 2009). The poorer STRs for children with

developmental disabilities are of concern because of the correlations between these early relationships and children's concurrent and future adjustment to schooling.

Children with ASD are often characterized by risk factors that we hypothesize would make poor STRs more likely, but that also could make the potential benefits of good STRs more likely. The cognitive and communicative deficits and low adaptive functioning of many children with ASD may make demands of school more challenging, possibly requiring more adult assistance in mastering the basic behavioral, academic, and social skills necessary to get by in school. In addition, children with ASD face a greater risk of behavioral and psychiatric problems than their typically developing counterparts or children with other developmental delays (e.g. [Leyfer et al., 2006](#); [Matson & Nebel-Schwalm, 2007](#); [Moseley, Tonge, Brereton, & Einfeld, 2011](#)), especially when their autism diagnosis is coupled with low cognitive functioning ([Eisenhower et al., 2007](#)). In one study even as early as age three, 46% of children with ASD or developmental delay had clinically elevated behavior problems, compared to 10% of their typically developing peers ([Eisenhower et al., 2007](#)).

Many of the ways in which children with ASD have been shown to impact their parents may also characterize their interactions with teachers. It is well known that parents of young children with ASD report more parenting stress than parents of typically developing children and of children with intellectual disability (e.g., [Eisenhower, Baker, & Blacher, 2005](#); [Hoppes & Harris, 1990](#); [Wolf, Noh, Fisman, & Speechley, 1989](#)). So, too, in an observational study, parents of school-age children with developmental delays spent more time working to gain compliance in their parent–child interactions compared to parents of typically developing children, and experienced more behavior management struggles and more coercive interactions with their children ([Floyd & Phillippe, 1993](#)). Among families of 6-year-olds with and without ASD, parents have shown more negativity and less positivity in their interactions when their children had ASD ([Croft et al., 2001](#)). On the other hand, parent behaviors that were more sensitive to, and synchronized with, child behaviors have been associated with better joint attention and compliance, two domains of behavior that are integral to the development of positive student–teacher relationships ([Blacher, Baker, & Kaladjian, 2013](#); [Lemanek, Stone, & Fishel, 1993](#); [Siller & Sigman, 2002](#)).

In one of the only studies we identified that specifically assessed the STRs of children with ASD, the 12 children with ASD included demonstrated poorer quality STRs as well as more behavior problems and less social inclusion at school ([Robertson, Chamberlain, & Kasari, 2003](#)). While limited due the small sample size, these findings lend some support to the contention that children with ASD may be at particular risk for poorer relationships with their teachers and experience the concurrent and long-term liabilities engendered by such relationships. Indeed, the more obvious symptoms of ASD may also have a particularly strong impact on the STR quality.

Previous analyses with the two comparison groups included in the present report – children with intellectual disability and children with typical cognitive development – showed that child behavior problems and social skills were each related concurrently and predictively to total STRs ([Eisenhower et al., 2007](#)). Moreover, behavior problems primarily related to student–teacher conflict, whereas social skills primarily related to student–teacher closeness ([Blacher et al., 2009](#)). Given that behavior problems, social difficulties, and unique autistic traits are characteristic of children with ASD, in the present study we examined whether these same associations among behavior problems, social skills, autistic symptomatology, and STRs would be found within the ASD sample.

Three questions were explored in this study: (1) do children with autism spectrum disorders (ASD) differ in overall student–teacher relationship quality from a comparison sample of children with intellectual disability and children with typical development? (2) Within the ASD sample, does student–teacher relationship quality relate to the child's behavior problems and/or global social skills? (3) Within the ASD sample, does student–teacher relationship quality further relate to children's ASD-specific symptoms as measured by an aspect of social responsiveness?

2. Method

2.1. Participants

Participants were 165 children and their teachers. A sample of children with ASD ($n = 36$) was compared to samples of children with intellectual disability (ID; $n = 38$) and typical development (TD; $n = 91$).

The sample of children with ASD had a mean age of 8.8 ($SD = 2.5$). They all attended self-contained non-public schools for children on the autism spectrum. Non-public school placement is made by the child's Individualized Education Plan (IEP) team when the needs of the student cannot be met in a public school setting. A child with exceptional needs who requires specialized services may be educated in a non-public school setting. This setting must provide “appropriate special educational facilities, special education or designated instruction and services required by the individual with exceptional needs if no appropriate public education program is available” ([California Education Code § 56365, 2009](#)). Both non-public schools (one on the west coast and one on the east coast of the United States) confirmed the diagnosis of an autism spectrum disorder (ASD) through a clinical, diagnostic assessment by a psychologist.

Two additional groups of children, aged 8 years, were included for comparison purposes. These ID and TD children comprised a sample of convenience from another ongoing study ([Baker, Blacher, Crnic, & Edelbrock, 2002](#)). As participants in a multi-site study, these families had been recruited from rural Pennsylvania (24%) and Southern California (76%) at age 3 years. Children with developmental delays were recruited through community agencies serving persons with developmental disabilities, and children with typical development were recruited primarily through

Table 1

Group comparisons on demographic, behavior problem, and social skill variables.

	Autism spectrum disorders <i>n</i> = 36	Intellectual disability <i>n</i> = 38	Typical development <i>n</i> = 91 ¹	<i>F</i> or Chi square
Demographics				
Child sex: % boys	83.8	62.2	56.0	$\chi^2 = 8.79^*$
Child race: % White, non-Hispanic	83.3	48.6	65.9	$\chi^2 = 9.56^{**}$
Mother education: mean (SD) ²	3.66 (.90)a	2.82 (.93)b	3.65 (1.20)a	$F = 8.51^{***}$
Mother marital: % married	84.4	79.4	88.5	$\chi^2 = 1.69$
Externalizing behavior problems				
Teacher: TRF T score (SD)	61.6 (8.3)a	55.7 (8.8)b	50.2 (9.3)c	$F = 21.83^{***}$
Mother: CBCL T score (SD)	60.5 (9.6)a	57.8 (8.1)a	49.1 (11.0)b	$F = 18.81^{***}$
Social skills				
Teacher: SSRS-T-SS ³ (SD)	77.4 (15.5)a	89.7 (13.6)b	101.8 (12.2)c	$F = 46.90^{***}$
Mother: SSRS-P-SS (SD)	63.3 (16.5)a	84.8 (15.3)b	103.1 (16.5)c	$F = 69.86^{***}$

a,b,c: means with different post-scripts differ by $p < .05$.* $p < .05$.** $p < .01$.*** $p < .001$.¹ The *N* in one or more groups is smaller in some analyses due to missing data.² 1 = HS degree; 2 = HS degree; 3 = Voc or AA degree; 4 = BA., MS; 5 = MA, MEd; 6 = Ph.D., MD, JD.³ Standard score.

preschools and day care programs. For the present analyses, children classified with intellectual disability (ID) had IQ scores in the mild, or moderate range of intellectual functioning (IQ = 40–75) and adaptive behavior scores on the Vineland below 85. Children classified as typically developing (TD) had IQ scores of 85 and above, with no premature birth or developmental disability.

Table 1 shows child, parent, and classroom demographic characteristics for the participants. Overall, considering race, 83% were White/Non-Hispanic White; 6% Asian; 3%; Black/African-American; and 8% other or mixed (e.g., parent identified with more than one race). Eighty-four percent of the sample was comprised of intact families with 90% earning more than \$50,000 annually. Overall, 63% of mothers and 65% of fathers had earned a bachelor's degree or higher. There was a significant difference in mother education, with mothers in the ASD and TD groups having significantly higher education levels than the parents of the children with ID. We note that the demographic differences between the ASD group and the two other groups was not central to the thesis of this paper regarding STR and ASD; the TD and ID groups are included for reference purposes.

With regard to child characteristics, Table 1 indicates that teachers reported higher externalizing scores on the Teacher Report Form of the Child Behavior Checklist (Achenbach, 1991) and lower social skills scores based on the Social Skills Rating System (Gresham & Elliott, 1990) for the ASD group than either the ID or TD groups. Parents reported higher CBCL externalizing scores for the ASD group than the TD (but not ID) group, and lower SSRS scores for the ASD group than both comparison groups. We further note that these differences are consistent with literature on rates of co-morbidity in ASD samples and higher rates of social impairments, both of which put the ASD group of children at higher risk.

2.2. Measures

2.2.1. Student Teacher Relationship Scale

(STRS; Pianta, 2001). The dependent variable for this study was the Student Teacher Relationship Scale (STRS; Pianta, 2001), a teacher-completed measure that assesses the quality of the student–teacher relationship. This 28-item teacher-completed measure (overall $\alpha = .79$) includes three subscales. The Conflict subscale (12 items, $\alpha = .89$) measures teacher feelings of negativity and conflict with the student (e.g. “This child and I always seem to be struggling with each other”). The Closeness subscale (11 items, $\alpha = .81$) measures teacher feelings of affection and open communication toward the student (e.g. “I share an affectionate, warm relationship with this child”). The Dependency subscale (5 items, $\alpha = .64$) measures the teacher's perception as to whether the student is overly dependent (e.g., “This child asks for my help when he/she really does not need help”). Normative data reported in the manual report means and standard deviations for the total score ($M = 114.23$, $SD = 15.47$), Conflict subscale ($M = 24.40$, $SD = 8.93$), Closeness subscale ($M = 42.01$, $SD = 6.22$), and Dependency subscale ($M = 10.74$, $SD = 3.54$). The STRS has been used in many studies and has sufficient evidence of validity and reliability (Pianta et al., 1995). The total score is of most interest, derived using a formula that produced a range in the normative sample from 55 to 140. Here, the Conflict and Closeness subscales will also be examined in analyses; the Dependency subscale was less reliable so we did not include it in more complex analyses. For this study, measures were completed in the spring, allowing ample time for the students to become accustomed to the classroom environment and for the teachers to engage with them.

2.2.2. Child Behavior Checklist

(CBCL; Achenbach, 2000; Achenbach & Rescorla, 2001). Two versions of the CBCL cover the ages 1½–18 years. The majority of children were age 6 or older, and thus parents received the school-aged 118 item version (Achenbach & Rescorla, 2001). There were only two students less than age 5, and their parents received the preschool version with 99 items (Achenbach, 2000). The CBCL is a widely-used measure of child behavior problems. Behaviors or problems are listed and participants rate each item on a 3-point Likert-type scale: *not true* (0), *somewhat or sometimes true* (1), or *very true or often true* (2). A *T* score with a mean of 50 and standard deviation of 10 is derived for total behavior problems and two broadband scales: externalizing and internalizing problems. The Externalizing *T* score was used in the present analyses. Achenbach and Rescorla (2001) report high reliability and validity for the CBCL; CBCL reliability for total behavior problems is .84 for the school-age version and .90 for the preschool version.

2.2.3. Social Skills Rating System-Parent

(SSRS-P; Gresham & Elliott, 1990). The SSRS-P asks parents to rate their child's social skills on 38-items that measure cooperation (10 items), assertion (10 items), self-control (10 items) and responsibility (8 items). Social skills are rated on a 3-point Likert-type scale as *not true* (0), *sometimes true* (1), and *often true* (2). Standard scores have a mean of 100 and standard deviation of 15. Derived by factor analysis, the SSRS provides standard scores along the dimensions of Social Skills and Problem Behaviors. We used only the total Social Skills Scale, where higher scores reflected better social functioning. The total score has good internal consistency ($\alpha = .87$) and good discriminant validity (Gresham & Elliott, 1990). The total standard score was used for analyses.

2.2.4. Social Responsiveness Scale

(SRS; Constantino, 2005). The SRS is a 65-item questionnaire that can be completed by a parent or teacher for youth between the ages of 4 and 18 years. The SRS provides a quantitative score for autistic social impairment, particularly suitable for children in non-public school settings as in this study. Sixty-five items in the areas of interpersonal behaviors, communication, and repetitive/stereotypic behaviors that typify autism spectrum disorders are assessed and rated on a four-point Likert-type scale as *not true* (1), *sometimes true* (2), *often true* (3), and *almost always true* (4). Males and females are scored differently and total score alpha reliability estimates for males and females are above .90. The five subscales from this measure are Social Awareness/Receptive; Social Cognition/Cognitive; Social Communication/Expressive; Social Motivation/Motivational; and Autistic Mannerisms/Preoccupations. The SRS provided a measure of severity of social functioning for the participants along a continuum of impairment using *T* scores with a mean of 50 and a standard deviation of 10. Higher scores on the SRS indicated more impairment in social functioning. This measure was administered to parents and teachers of the children in the ASD sample. The SRS Autistic Mannerisms subscale score was considered as an indicator of how the more obvious symptoms of ASD might affect the STR. Other subscales were not considered separately.

2.2.5. Family Information Form

(FIF; Baker et al., 2002). This is a brief questionnaire administered to parents in order to collect demographic information (see Table 1).

2.2.6. Teacher Report Form

(TRF; Achenbach, 1991). This is the 112 item teacher version of the CBCL. Item construction and scoring are the same as with the parent-completed CBCL. The broadband Externalizing Problems *T* score was used in the present analyses.

2.2.7. Social Skills Rating System-Teacher

(SSRS-T; Gresham & Elliott, 1990). This measure is very similar to the SSRS-P, but does not include the responsibility domain and does include an academic competence subscale. Good internal reliability is reported ($\alpha = 0.94$), along with adequate discriminant validity (Gresham, Elliott, & Black, 1987). The total standard score was used for analyses.

2.3. Procedures

All research procedures were reviewed and approved by the institutional review boards of the three participating universities and the two non-public schools involved. When a postcard of interest was obtained from parents we scheduled an initial phone interview, usually with the mother, to review consent procedures and answer parent questions. Following the phone interview, two copies of the consent form and a packet of questionnaires were mailed to families. In addition, parents signed a teacher authorization form allowing their child's teacher to participate in the study. One copy of the parent consent form and all completed measures were returned to the researchers in a self-addressed, stamped envelope. Parents received a \$50 honorarium for participating in the study, which included the procedures described as well as completion of other measures and assessments not reported here.

Teachers received a consent form, a copy of the teacher authorization form signed by the parents, and a packet measures for each child in his/her classroom whose parents were participating. The teacher consent form and all completed measures were returned to the researchers in a self-addressed, stamped envelope. Upon completion of the measures, teachers received a \$25 honorarium per student participating in the study. These procedures were identical for all three groups of children.

3. Results

Prior to conducting the primary analyses, data were examined for outliers on the STRS and all independent measures. Only two scores were greater than three standard deviations (SD) from the group mean, and these were adjusted to be equivalent to the 3 SD score. Scores on four child, parent, and family demographic variables differed significantly across groups: child sex, child race, mom education, and family income. We correlated these demographic characteristics with STRS scores to determine whether any needed to be co-varied in analyses. Only one variable, child sex, correlated significantly with STRS ($r = -.18, p = .03$). That was likely because the autism group, with poorer STRS scores, was almost all boys. The child sex and STRS relationship in the TD/ID groups combined did not approach significance; therefore, we did not co-vary child sex in any STRS analyses. Missingness in the data appeared to be random and was handled by listwise deletion (Allison, 2001).

3.1. Student–teacher relationship for children with autism

The first question asked whether the STRS for children with autism differed from the STRS scores for children with ID or with TD. Table 2 shows the mean STRS total and subscale scores across diagnostic groups. The autism mean total score ($M = 98.0$) was significantly lower than both the ID score ($M = 110.3$) and the TD score ($M = 116.0$). On STRS sub-scales, the Closeness mean score was significantly lower for the ASD group than for the ID or TD groups. Too, the Conflict mean score was significantly higher for the ASD group than for the ID or TD groups. The Dependency mean score was similar for the ASD and ID groups, while each was higher than for the TD group.

In viewing Table 2, there are several points to consider. First, the mean STRS score for the TD group ($M = 116$) is very similar to the normative score of 114 reported by Pianta (2001). Second, the high STRS scores obscure somewhat the extent of the differences, as the effective range for total scores in this study is from the 70s to the 130s.

3.2. STRS and characteristics of the child with autism

Our second question asked whether the STRS scores for children in the ASD group were related to the child characteristics of behavior problems and social skills, as was previously reported for children in the ID and TD groups. Table 3 shows the final models of three regression analyses, where the dependent variables were STRS Total, Closeness, and Conflict scores. (Regressions were not run for Dependency, as the alpha of this 5-item sub-scale is only modest and the extent to which dependency has a negative valance would depend somewhat upon child age.)

The independent variables were teacher-reported child externalizing Behavior Problems (TRF) and Social Skills (SSRS) standard scores, entered together. Considering the STRS Total score, externalizing child Behavior Problems and child Social Skills each accounted for significant variance, together accounting for 49% of the variance. With STRS Closeness 50% of the variance was accounted for; Social Skills (but not Behavior Problems) accounted for significant variance. With STRS Conflict, 38% of the variance was accounted for; here externalizing Behavior Problems (but not Social Skills) accounted for significant variance.

The child measures analyzed for Table 3 were all taken from the teacher, so the relationships found among them may be attributable in part to shared method variance. We re-ran these analyses substituting mothers' scores for externalizing child Behavior Problems (CBCL) and Social Skills (SSRS). Together these scores accounted for 36.5% of the STRS Total variance, with Social Skills (but not Behavior Problems) entering significantly (Standardized beta = .505, $t = 3.13, p = .004$). Similar to the relationships using teacher-reported predictors, the STRS Closeness score was predicted by Social Skills (but not Behavior Problems), and accounted for significant variance (25% of the variance) (Beta = .511, $t = 2.91, p = .007$). However, with the STRS Conflict score, neither mother-reported Social Skills nor Behavior Problems accounted for significant variance. Thus, when parent -reported child Social Skills were substituted for the Social Skills score reported by teachers, the relationships were similar but reduced in strength.

Table 2
Student Teacher Relationship Scores (STRS) by child group.

STRS	Autism spectrum disorders $n = 38$	Intellectual disability $n = 38$	Typically developing $n = 91$	<i>F</i>
Closeness	34.1 (7.4)a	40.5 (7.2)b	41.5 (5.1)b	19.91***
Conflict	27.0 (8.9)a	20.9 (7.2)b	18.5 (9.0)b	13.27***
Dependency	11.0 (4.3)a	11.2 (3.8)a	9.1 (3.1)b	6.61**
Total	98.0 (12.1)a	110.3 (10.8)b	116.0 (12.9)c	28.63***

Scores with different footnotes differ at $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3

Children with autism spectrum disorders ($n = 36$). Regression analyses: variance in STRS total, closeness, and conflict scores accounted for by teacher measures of child externalizing behavior and social skills.

	<i>B</i>	Std. error	Beta	<i>T</i>
STRS Total				
TRF-Externalizing	-.551	.161	-.424	-3.42**
SSRS Standard Score	.384	.097	.492	3.96***
STRS Closeness				
TRF-Externalizing	.134	.090	.183	1.49
SSRS Standard Score	.312	.054	.710	5.75***
STRS Conflict				
TRF-Externalizing	.522	.129	.553	4.05***
SSRS Standard Score	-.114	.078	-.201	-1.47

** $p < .01$.

*** $p < .001$.

3.3. The Social Responsiveness Scale

Our third question asked whether the Social Responsiveness Scale (SRS), developed for assessing children with ASD and program planning, accounted for variance in the student–teacher relationship beyond that accounted for by Behavior Problems (TRF) and Social Skills (SSRS-T). In the present ASD sample, the five sub-scale scores each correlated very highly with the total (for parents, $r = .79$ through $.94$; for teachers, $r = .74$ through $.95$). The correlations between parent and teacher scores, however, were surprisingly low, with only two sub-scales and the total significant at $p < .05$ (Social Cognition, $r = .36$; Social Motivation $r = .46$; Total $r = .40$). Pearson r correlations of SRS scores and the STRS score were higher for teachers; for Closeness, each of the five sub-scales and the Total score was significant at least at $r = -.75$, $p < .01$. There were no significant SRS and STRS Conflict score correlations, so the significant correlations with STRS Total (e.g. SRS Total, $r = -.50$, $p = .002$) appear to be accounted for by the Closeness subscale.

We conducted a regression on the STRS Closeness score, where SRS scores were a significant predictor. In the first step, we entered the teacher-reported externalizing Behavior Problems and Social Skills standard score, as we did for the analyses in Table 3. In a second step, we entered the SRS Total score and, in a separate analysis, the SRS Autistic Mannerism score. This separate analysis was to explore whether the more obvious symptoms of autism would affect the student–teacher relationship. Table 4 shows these regressions. The SRS total accounted for additional significant variance (final model, standardized beta = $-.463$, $p = .004$) beyond the CBCL and SSRS. Overall, 61.8% of the variance was explained. When SRS was represented by just the Autistic Mannerisms scale in the model, it explained even more variance, 65.8% overall (standardized beta = $-.531$). Thus, we can conclude that the autism-specific SRS measure, especially the Autistic Mannerisms scale, added significantly in the prediction of STRS Closeness scores.

4. Discussion

Student–teacher relationships (STRs) for children with ASD appear to be qualitatively different from those of similarly aged children with ID or typical development. The STRs for children with ASD were considerably lower, with less closeness and more conflict, than STRs in the two comparison groups. For the most part, the STR for children with ASD related to scores on measures of social skills and behavior problems. As previously found with ID and TD groups (Blacher et al., 2009), student–teacher closeness was accounted for mainly by child social skills while student–teacher conflict was accounted for mainly by behavior problems. The Closeness subscale score of the STRS also correlated negatively with the Social Responsiveness Scale (SRS) total score and sub-scales, indicating less closeness when there was evidence of more autism symptomatology. Indeed, the SRS total score and Autistic Mannerisms subscale, when entered into regression

Table 4

Regression analyses on STRS Closeness scores including Social Responsiveness Scale score.

	<i>B</i>	Std. error	Beta	<i>T</i>
TRF-Externalizing	.121	.084	.161	1.44
SSRS-T Standard Score	.174	.068	.395	2.57*
SRS total score	-.108	.035	-.463	-3.06**
TRF-Externalizing	.187	.080	.248	2.34*
SSRS standard score	.163	.062	.369	2.64*
SRS Autistic Mannerisms	-.455	.121	-.531	-3.78**

* $p < .05$.

** $p < .01$.

analyses, accounted for significant additional variance in Closeness, beyond that accounted for by social skills and behavior problems.

To some extent, this initial investigation of student–teacher relationships in the context of autism revealed the unique role of social responsiveness in the adaptation of the child with autism. Clearly, Autistic Mannerisms negatively affected the teacher's perception of closeness. Indeed, this particular subscale reflects some unusual behaviors that may be less understood by many teachers, e.g., highly restricted interests and/or stereotypical behaviors. While the closeness items are not particularly autism-specific (e.g., “I share an affectionate, warm relationship with this child; “If upset, this student will seek me out for support”), these items were less endorsed in reference to children with ASD. These results are especially concerning, as teachers in public school settings are less likely to experience as many children on the spectrum as teachers in the present non-public school settings that were specifically for autism; thus, this link between higher ASD symptoms and poorer STR quality might be even stronger in public school settings than in the non-public school environments we examined here. Public school general education teachers with less ASD-specific training also may be less aware that the long-term adverse consequences of social and behavioral maladjustment in school can be substantial for children with ASD (Cederlund et al., 2008; Chamberlain et al., 2007; Murray & Pianta, 2007).

The present findings may also be understood within the context of previously published research on the student–teacher relationship with typically developing children and children with ID, where child behavior problems and social skills were shown, longitudinally, to predict aspects of the student–teacher relationship (Eisenhower et al., 2007; Blacher et al., 2009). The current study of children with ASD, at one time-point, also showed behavior problems to relate most strongly to the Conflict sub-scale. This finding is particularly significant because the children with ASD all attended school in well-known and prestigious non-public school settings that should be better equipped to manage children with difficult behaviors, considering that they are affiliated with research universities and strong professional development programs for teachers. Yet, their teachers reported higher conflict than did teachers of children with ID or TD, most of whom attended public schools. In any event, a focus on reducing externalizing behaviors may lead to decreases in conflict and hence increased STRs.

One way to reduce behavior problems for children on the spectrum might be to increase social skills, a goal widely recognized by researchers and practitioners alike (DeRosier, Swick, Davis, McMillen, & Matthews, 2011; Laugeson, Frankel, Mogil, & Dillon, 2009; Laugeson, Frankel, Gantman, Dillon, & Mogil, 2011; Rao, Beidel, & Murray, 2008). The findings from this study would be especially concerning, if it were not for a body of evidence, including correlational and intervention research, suggesting that change in the social and behavioral symptoms associated with ASD is possible, and can occur through various mechanisms, including parenting practices (Rocha, Schreibman, & Stahmer, 2007; Symon, 2005), academic experiences (Hamre & Pianta, 2001; Ladd et al., 1999), social cognition or emotion recognition (Kats-Gold, Besser, & Priel, 2007), or psychosocial treatment (e.g., Butter, Mulick, & Metz, 2006; Eldevik, Eikeseth, Jahr, & Smith, 2006). Clearly, intervention that has both child problem behavior and teacher perceptions or rapport as foci is likely to produce more robust improvements in the student–teacher relationship.

There are several limitations in the present study that indicate directions for future research. First, we were not able to obtain IQ scores for the ASD group, so we could not address whether overall cognitive functioning accounted for variance in STRs. In our ID group IQ scores were unrelated to STRs ($r = .09$); however, given the wide IQ range associated with ASD, the role of cognitive functioning and STRs should be explored. Second, as with many self-report measures, the validity of teacher-reported STRs cannot be determined. Future studies that include repeated direct observation of teacher–student interactions in the classroom, or even teacher interviews, would add greatly to an understanding of STRs, their predictors, and their consequences. Third, the ASD group in the present study included only children in non-public schools focused on autism. While one might expect that teachers in these specialized schools would report better relationships with their students with autism, the question nevertheless could be raised of whether the lower STRs found were attributable to ASD or to the school setting. In an earlier study with younger children, Blacher et al. (2009) examined the student–teacher–relationship and found that 19% of their sample of ID and TD children (combined) were in non-public school settings, with 81% in public schools. The STRs were virtually identical across the two school contexts. Thus, it would be important to broaden the study of STRs to include a more comprehensive examination of varying school contexts, and to do so with a larger sample of children with ASD.

5. Conclusion

With the philosophy of full inclusion embraced by many school districts, children with ASD at all cognitive levels and functioning may be placed into general education classrooms, particularly in the early grades. It is heartening that a close relationship with one's teacher can serve as a protective factor for children at risk of social and/or academic problems (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002). Future research efforts should include the identification of moderating influences on student–teacher relationships with the ultimate goal of improving overall school outcomes for young children with ASD.

Conflict of interest

All authors declare that they have no conflict of interest.

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